

**ENVIRONMENTAL QUALITY BOARD  
REGION II  
MANAGEMENT/TASK WORK PLAN**

**FOR THE**

Arecibo Solid Waste Disposal

**LOCATED IN**

State Road #682 Km. 10.7, Hm. 0.6, Factor Ward,  
Arecibo, Puerto Rico

**PROJECT/SITE MANAGER:**

Lizette Fuentes  
Lizette Fuentes

**DATE PREPARED:**

March 7, 1995

**DISTRIBUTION:**

| <u>Name</u> | <u>Initial/Date</u> |
|-------------|---------------------|
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**PREQB REPRESENTATIVE:**

**Reviewed by:**

Dr Soto  
Denise V. Soto

**DATE:** May 15, 1995

**USEPA REPRESENTATIVE:**

Juan E. Dávila Juan E. Dávila

**DATE:** 6-30-95



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## PREQB/TDD Summary

### TDD Summary:

TDD No: 02-9503-13, U.S. EPA Site No: PR 980641039  
Site/Project Name: Arecibo Solid Waste Disposal  
Location: State Road #682, Km. 10.7, Hm. 0.6, Factor Ward, Arecibo  
PREQB Representative: Genaro Torres-León  
EPA Regional Project Officer: Eng. Juan E. Dávila  
Date TDD Issued: March 7, 1995, Date of Completion: \_\_\_\_\_

### Summary of Assignment/Project Objective:

This workplan encompasses the conducting, of an onsite inspection with sampling at the Arecibo Solid Waste Disposal, Factor Ward, Arecibo, Puerto Rico. The site inspection will be used to complete a Sampling Trip Report and the Final Draft Site Inspection Prioritization Report (SIP).

### Deliverable(s) for EPA Use: (Check all those that apply)

- ☒ Sampling Trip Report
  - ☒ Final Draft SIP Report
  - ☐ Other: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Required Reviews and Approvals: (Check all those that apply)

- ☐ Technical Supervisor
- ☒ Final Report Review by technically qualified personnel independent of report preparation.

**Site History/Description:**

**Prepare a brief description of the site (landfill, drum, storage, etc.), and conclusions from past data assessments; indicate the current or past operators.**

The Arecibo Solid Waste Disposal is located on State Road #682, Km. 10.7, Hm. 0.6 Factor Ward in Arecibo, Puerto Rico. The geographic coordinates are 18° 27' 08" N latitude and 66° 38' 25" W longitude. The total area of the landfill consists of 93 to 95 acres, but only 40 to 50 acres are used as an active area. The property owned by the Puerto Rico Land Authority began operations in 1973 and has been operated by the Arecibo Municipality. The site is located over a relatively flat area between the central and south canal of Caño Tiburones. This irrigation channel system is the nearest surface water body to the site. The landfill is surrounded to the north by the Atlantic Ocean and Caño Tiburones. To the southwest at 0.5 miles is the Garrochales Community with approximately 100 residences; and southeast are two dairy farms, scattered houses along the roads, and an unnamed intermittent creek.

Along the years of operation, the landfill have accepted municipal (domestic, commercial), industrial, agricultural, pharmaceutical and slaughterhouse wastes from the Arecibo and the Barceloneta municipalities; in addition to 6,000 ft<sup>3</sup>/month of sludges from the PRASA-Arecibo Filter Plant. Inspections of the site conducted by the Puerto Rico Environmental Quality Board (PREQB) evidence poor management practices. Wastes are dumped in the open field and stayed uncovered for various days due to problems with the transportation of the cover material. This situation and the open fires had created an air and water pollution problem. For their multiple violations, this landfill has been referred in many occasions to the PREQB Legal Division, which in turn had issue many orders against the municipality.

On February 22, 1985, NUS Corporation conducted a site investigation during which two groundwater, four surface water, and four sediment samples were collected. No soil sample were collected on the landfill. Zinc and solvents including toluene and trichloroethene were found in surface water, while chromium was found in sediments onsite. However, according with the sample analysis report, some samples were rejected because failed to comply with QA/QC



requirements. Also, there is no evidence of collection of background samples for any of the pathways during the sampling, which means that there is no any analytical sample for comparison in order to attribute contaminants to the site.

During the inspection performed by Superfund PA/SI personnel on July 1993, uncovered wastes, sludges, biomedical wastes, and fires were observed in the landfill.

**Technical Approach:**

☒ See Sampling Plan, 02-9503-13-SP Dated: March 07, 1995  
Provided as Attachment B to this Work Plan.

☒ Other: Provide a rationale or explanation if methods to be followed deviate or are not encompassed in existing work instructions or EPA-approved guidance documents.

N/A

**Personnel Requirements:**

| <u>Personnel Assignment:</u>                                  | <u>No. of Persons<br/>Required</u> |
|---|------------------------------------|
| <input checked="" type="checkbox"/> Site Manager              | <u>1</u>                           |
| <input checked="" type="checkbox"/> Site Safety Officer       | <u>1</u>                           |
| <input checked="" type="checkbox"/> Sample Management Officer | <u>1</u>                           |
| <input checked="" type="checkbox"/> Samplers                  | <u>2</u>                           |
| <input checked="" type="checkbox"/> Other: <u>Decon</u>       | <u>2</u>                           |
| <b>Total</b>  | <u>7</u>                           |

**Personnel Responsibilities: (Check all those that apply)****Site Manager (SM):**

- ☒ Responsible for management and supervision of designated project staff in performance of tasks encompassed by the Work Plan.
- ☒ Responsible for performance of prestudy tasks including search, review, and evaluation of background information; determination of informational and data needs; and preparation of study or sampling plan.
- ☒ Responsible for documentation of field activities.
- ☒ Responsible for preparation of technical directive deliverables.

**Assistant Site Manager (ASM):**

- ☒ Responsible for providing management/supervision support under direction of the SM.
- ☐ As co-investigator, responsible for documentation of field activities.
- ☐ As co-investigator, responsible for providing as needed consultant expertise based on professional background.

**Site Safety Officer (SSO):**

- ☒ Responsible for implementation of the site safety plan and, should hazardous conditions exist, has the authority to shut down field operations.
- ☒ Responsible for performance of health-and safety-related air monitoring.
- ☒ Responsible for directing and/or assisting in the performance of all personnel and equipment decontamination activities.

**Samples Management Officer (SMO):**

- ☒ Responsible for labeling of sample containers, preparation and disposition of sample custody documents and traffic reports, and preparation of samples for shipment to designated laboratories.
- ☒ Responsible for sample container and sampling equipment decontamination tasks under direction of the SM and SSO.

**Samplers:**

- ☒ Responsible for conducting sampling activities under supervision of the SM and in conformance with the methods specified in this Work Plan.
- ☒ As required, responsible for assisting the SSO and/or SMO on an as-needed basis.

**List any other required personnel and/or responsibilities not indicated above.**

- Additional technicians will serve as decon for personnel and equipment decontamination.

**Referenced Background Data:**

**List prestudy file search reference information (usually provided by U.S. EPA) and/or associated technical directive files.**

- Preliminary Assessment Report, May 15, 1984, Puerto Rico Environmental Quality Board; Superfund files.
- Final Draft Site Inspection Report, October 25, 1985, NUS Corporation, Superfund Division: Technical Directive Document No. 02-8412-02
- Preliminary Site Inspection Prioritization Evaluation, August 31, 1993, Puerto Rico Environmental Quality Board, Superfund files.

**Health and Safety Considerations:**

**Refer to attachment A, the Site Safety Plan, which has been approved by the Regional Safety Officer.**

**Title:** Generic Health and Safety Plan for Superfund Site Inspections - Revision 1

**Date:** May 26, 1992

**(Safety Officer Approval Date)**

**Note:** All health and safety considerations must conform with requirements provided in OSHA, General Industry Standard, 29 CFR 1910.120, Hazardous Waste Operation and Emergency Response, 12/19/86.

**Interface/Planning Requirements (reference attachments if necessary):**

N/A

**Interface with EPA (provide contact name and phone number):**

Eng. Juan E. Dávila - USEPA Region II, New York

**Interface with State/Local Agencies (provide contact name and phone number):**

N/A

**Site Access Arrangements (provide contact name and phone number):**

Eng. Zoé Atances, WERHAN Environmental Technology, Landfill's Administrators,  
(809) 376-1523

**Community Relations Planning Requirements (briefly describe EPA-approved protocol; provide contact name and phone number):**

All aspects concerning community relations will be referred to the Director of the PREQB Community Relations Office, (809) 767-8049. If necessary, further questions will be referred to Eng. Juan E. Dávila at USEPA, Region II, telephone number (212) 637-4341.

**Special Training Requirements (other than routine training received by PREQB employees):**

N/A

**Accountable Records and Documents:**

**Check of records that will support the validity and evidentiary value of technical work performed.**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Work Plan  | <input checked="" type="checkbox"/> Correspondence (Telecon notes, memos, letters, etc.)                 |
| <input checked="" type="checkbox"/> Safety Plan  | <input checked="" type="checkbox"/> Deliverable(s) to EPA (List below)                                   |
| <input checked="" type="checkbox"/> Work Plan/Sampling Plan  | <u>Sampling Trip Report</u>  |
| <input checked="" type="checkbox"/> Calibration and maintenance records for measuring and testing equipment (for HNu, OVA, etc.) | <u>Final Draft SIP Report</u>  |
| <input checked="" type="checkbox"/> Written Documentation of Field Activities (i.e., log books, notes, calculations, etc.)       | <u> </u>   |
| <input checked="" type="checkbox"/> Photographic Documentation of Field Activities   | <u> </u>   |
| <input type="checkbox"/> Other: <u> </u>   | <input type="checkbox"/> Records of review and approvals for project control documents and deliverables. |
| <u> </u>   | <input type="checkbox"/> Soil Stratigraphic Records (drilling logs, etc.)                                |
| <u> </u>   |  |

**Procurement Documents (Specify and attach requests for bids and/or proposals, subcontract agreements, etc.):**

N/A

**Other accountable documents and records not listed above:**

N/A

**List and reference the applicable EPA and PREQB approved operational and technical methods not listed above and applicable to the work encompassed by this Work Plan:**

N/A

**ATTACHMENT A**

**SITE SAFETY PLAN**

## PREQB/REGION II

### SITE SAFETY PLAN

**Site Address:** Arecibo Solid Waste Disposal  
State Road # 682, Km. 10.7, Factor Ward  
Arecibo, Puerto Rico

**Site Contact:** Eng. Zoé Atances

**Phone Number:** (809) 376-1523

**Other Contacts:** \_\_\_\_\_

**Purpose of Site Visit:** Sampling

**Proposed Date of Work:** \_\_\_\_\_

**Proposed Site Investigation Team:**

**PREQB Personnel:**

**Responsibilities:**

Lizette Fuentes

Site Manager

Ramón L. Díaz

Site Safety Officer

Denise V. Soto

Sample Manager Officer

Pascual Velázquez

Sampler

Nereida Hernández

Decon Team

**Other:**

**Purpose:**

Jorge L. Quiñones

Sampler

Decon Team

**Date**

**Prepared by:** Lizette Fuentes

(03/07/95)

**Revised by:** Denise V. Soto, Acting Chief,  
PA/SI Section, Superfund Program

(5/5/95)

**PREQB Office Representative:** Mr. Genaro Torres-León  
Emergency Response and Superfund Area,  
Director - PREQB

( / / )

**Approvals:** Eng. Juan E. Dávila, Emergency Response Division  
USEPA Program Support Branch

( / / )



**Background Information:**

Site Status:        ☒ Active    ☐ Inactive        ☐ Unknown

**Site Description (be specific, include topography, structures, size, etc.):**

Arecibo Solid Waste Disposal has a total area of 93 to 95 acres from which 40 to 50 acres are used as an active area. There are three buildings onsite located at approximately 0.7 miles from the landfill's active area.

The landfill is located over a relatively flat area between the central and south canal of Caño Tiburones. The latter is considered a critical wildlife area because of its potential for restoration as a waterfowl area. Open sectors in the central portion of Caño Tiburones support a variety of birds including Waterfowl, Herons, Sandpipers and other species. This irrigation channel system is the nearest surface water body to the site. To the north of the site is the Atlantic Ocean and Caño Tiburones. To the southwest at 0.5 miles is the Garrochales Community with approximately 100 residences; and southeast are two dairy farms, scattered houses along the roads and an unnamed intermittent creek.

**Site History:**

Arecibo Solid Waste Disposal is owned by the Puerto Rico Land Authority and is operated by the Arecibo Municipality since 1973. Along the years of operation, the landfill have accepted municipal (commercial and domestic wastes) industrial, agricultural, pharmaceutical and slaughterhouse wastes from Arecibo and Barceloneta Municipalities; in addition to 6,000 ft<sup>3</sup>/month of sludges from PRASA-Arecibo Filter Plant. Inspections of the site conducted by the PREQB evidence poor management practices. Wastes are dumped in the open field and stayed uncovered for various days due to problems with the transportation of the cover material. This situation and the open fires had created an air and water pollution problem. For their multiple violations, this landfill has been referred in many occasions to the PREQB-Legal Division, which in turn had issue many orders against the Municipality.

On February 22, 1985, NUS Corporation conducted a site investigation during which two groundwater, four surface water, and four sediment samples were collected. Zinc and solvents including toluene and trichloroethene were found in surface water, while chromium was found in sediments onsite. However, according with the sample analysis report, some samples were rejected because failed to comply with QA/QC requirements. Also, there is no evidence of collection of background samples for any of the pathways during the sampling which means that there is no analytical samples for comparison in order to attribute contaminants to the site.

During the inspection performed by Superfund PA/SI personnel on July 1993, uncovered wastes, sludges, biomedical wastes, and fires were observed in the landfill.

**Monitoring used on previous site work or previous sampling data (include dates and by whom work was done):**

OVA and HNu were used during the Site Inspection performed by NUS in February 1985, but no readings were obtained.

**Hazard Evaluation:**

|                         |  |   |                                       |
|-------------------------|--|---|---------------------------------------|
| <b>Waste Types:</b>     | <input checked="" type="checkbox"/> Liquid   | <input checked="" type="checkbox"/> Solid | <input type="checkbox"/> Sludge       |
| <b>Characteristics:</b> | <input type="checkbox"/> Corrosive           | <input type="checkbox"/> Ignitable        | <input type="checkbox"/> Radioactive  |
|                         | <input checked="" type="checkbox"/> Volatile | <input checked="" type="checkbox"/> Toxic | <input type="checkbox"/> Reactive     |
|                         | <input checked="" type="checkbox"/> Unknown  | <input type="checkbox"/> Vapor            | <input type="checkbox"/> Other: _____ |
|                         | _____  |   |                                       |
|                         | _____  |   |                                       |
|                         | _____  |   |                                       |

**Hazard Identification/Ranking (based on task and contaminant):**Task: Soil Low ☒ Medium ☐ High ☐**Identification of Hazards (chemical and physical):**

Chemical Hazards: Low concentration of contaminants are expected.

Physical Hazards: None

Task: Surface Water Low ☒ Medium ☐ High ☐**Identification of Hazards (chemical and physical):**

Chemical Hazards: Low concentration of contaminants are expected.

Physical Hazards: Use of a boat will be necessary, for this reason sampling personnel should wear life preserver at this stage; follow and observe maritime and navigation safety rules.

**Hazard Assessment:** A low overall hazard exist at the site. Proper PPE and continuous air monitoring should alleviate any problems associated with the site.

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**OVERALL HAZARD:** ☐ Serious ☐ Moderate  
☒ Low ☐ Unknown

\* make sure units are the same  $\text{ppm} = \frac{\text{mg/m}^3 \times 24.45}{\text{molecular weight}} = \frac{\text{mg/L} \times 24,500}{\text{molecular weight}}$

| Hazardous/Toxic Known or Suspected Materials | Concentration* | Media: Soil, Sediment, Surface water, or groundwater | Toxic and Pharmacologic Effects  | Ionization Potential (IP), or Vapor Pressure VP in air | *TLV (STEL, TWA) IDLH                        | If concentration is > 10 ppm in Media. Use NFPA Guidance for Flammability, Reactivity, and Special Notice | Applicable Monitoring Instruments for Health and Safety Screening |
|--|----------------|--|--|--|--|---|---|
| 2-Hexanone<br>CAS# 591-78-6                  | Unknown        | Surface water  | Moderately toxic inhalations and intraperitoneal routes. Moderately irritating via skin and eye exposure.  | IP= 9.34 ev<br>VP= 4mm                                 | STEL:<br>TWA: 5 ppm<br>IDLH:                 | Flammability:<br>Reactivity: strong oxidizer<br>Special Notice:   |   |
| Chloroethane<br>CAS# 75-00-3                 | Unknown        | Surface water  | Moderately toxic by ingestion and inhalation routes. An irritant to skin, eyes and mucous membranes and harmful to the eyes. High concentrations of vapors cause narcosis.               | IP= 10.97 ev<br>VP= ≥ 1 atm.                           | STEL:<br>TWA: 1,000 ppm<br>IDLH:             | Flammability:<br>Reactivity: chemically active metals and with water to form<br>Special Notice:           |   |
| Ethylbenzene<br>CAS# 100-41-4                | Unknown        | Surface water  | Moderate toxicity, irritation by skin, eyes mucous membranes and by ingestion and inhalation routes.   | IP= 8.76 ev<br>VP= 10 mm at 79°F                       | STEL: 125 ppm<br>TWA: 100 ppm<br>IDLH:       | Flammability:<br>Reactivity: strong oxidizers<br>Special Notice:  |   |
| Toluene<br>CAS# 108-88-3                     | Unknown        | Surface water  | Poison by intraperitoneal route. Moderately toxic by inhalation and subcutaneous routes. Mutagenic data. A skin and eye irritant. Human central nervous system and psychotropic effects. | IP= 8.82 ev<br>VP= 20 mm at 65°F                       | STEL: 188 ppm<br>TWA: 50 ppm<br>IDLH:        | Flammability:<br>Reactivity: strong oxidizers<br>Special Notice:  |   |
| Zinc<br>CAS# 7440-66-6                       | Unknown        | Surface water  | Human skin irritant and pulmonary system effects.  |  | STEL:<br>TWA:<br>IDLH:                       | Flammability:<br>Reactivity:<br>Special Notice:   |   |
| Chromium<br>CAS# 7440-47-3                   | Unknown        | Surface water  | Human poison by ingestion with gastrointestinal effects. An experimental tumorigen and suspected carcinogen.   | IP= N/A<br>VP= 0 mm                                    | STEL:<br>TWA: 0.5 mg/m <sup>3</sup><br>IDLH: | Flammability:<br>Reactivity: strong oxidizers<br>Special Notice:  |   |

- References:
- Guide to occupational Exposure Values - 1993.
  - NIOSH pocket Guide to Chemical Hazard, June 1990 - USDHHS.
  - Hazardous Chemical Desk References N. Irving Sax, Richard J. Lewis, 1987

\* make sure units are the same ppm =  $\frac{\text{mg/m}^3 \times 24.45}{\text{molecular weight}}$  =  $\frac{\text{mg/L} \times 24,500}{\text{molecular weight}}$

| Hazardous/Toxic Known or Suspected Materials | Concentration* | Media: Soil, Sediment, Surface water, or groundwater | Toxic and Pharmacologic Effects  | Ionization Potential (IP), or Vapor Pressure VP in air | *TLV (STEL, TWA) IDLH                         | If concentration is > 10 ppm in Media. Use NFPA Guidance for Flammability, Reactivity, and Special Notice | Applicable Monitoring Instruments for Health and Safety Screening |
|--|----------------|--|--|--|---|---|---|
| Chromium<br>CAS# 7440-47-3                   | Unknown        | Surface water  | Human poison by ingestion with gastrointestinal effects. An experimental tumorigen and suspected carcinogen.                                   | IP= N/A<br>VP= 0 mm                                    | STEL:<br>TWA: 0.5 mg/m <sup>3</sup><br>IDLH:  | Flamability:<br>Reactivity: strong oxidizers<br>Special Notice:   |   |
| Lead<br>CAS# 7439-92-1                       | Unknown        | Surface water  | Affects human central nervous system. A poison by ingestion moderately irritating. Carcinogen of lungs and kidneys and experimental teratogen. | IP= N/A<br>VP= 0 mm                                    | STEL:<br>TWA: 0.15 mg/m <sup>3</sup><br>IDLH: | Flamability:<br>Reactivity: strong oxidizers<br>Special Notice:   |   |
| Cadmium<br>CAS# 7440-43-9                    | Unknown        | Surface water  | Poison to humans by inhalation and other routes. Poison by ingestion, intraperitoneal, subcutaneous, intramuscular, and intravenous routes.    | IP= N/A<br>VP= 0 mm                                    | STEL:<br>TWA: 0.01 mg/m <sup>3</sup><br>IDLH: | Flamability:<br>Reactivity: strong oxidizers; elemental sulfur, selenium and tellurium<br>Special Notice: |   |

- References:
- Guide to occupational Exposure Values - 1993.
  - NIOSH pocket Guide to Chemical Hazard, June 1990 - USDHHS.
  - Hazardous Chemical Desk References N. Irving Sax, Richard J. Lewis, 1987

**REQUIRED LEVELS OF PROTECTION**

| Task    | Name         | Respiratory | Clothing   | Gloves  | Boots   | Other;<br>Modifications   |
|---------|--------------|-------------|--|---|---|---|
| SM      | L. Fuentes   | C/D         | T/W  | L   | L   | Level B respiratory protection will be worn initially. If no reading above background are detected on the EMu/OVA/Microtip, personnel will be downgraded to Level C if area being sampled is dry and dusty conditions exist. Level D will be worn if the above conditions are absent. Safety glasses will be worn while on Level D. |
| SSO     | R. Díaz      | C/D         | T/W  | L   | L   |   |
| SMO     | D. Soto      | C/D         | T  | L   | L   |   |
| Sampler | J. Quiñones  | C/D         | T/W  | L/Ni  | L   |   |
| Sampler | P. Velázquez | C/D         | T/W  | L/Ni  | L   |   |
| Decon   | N. Hernández | C/D         | T  | L/Ni  | L   |   |
|         |              |             | Tyvek= T<br>Saranex= S<br>Field= F<br>Chemrel= C<br>Wader= W | Latex= L<br>Neoprene= Ne<br>Viton= V<br>Butyl= B<br>FVA= A<br>Nitrile= Ni<br>PVC= C | Fireman's= F<br>Tyvek Cover= C<br>Latex Overboot= L<br>Butyl overboot= B<br>Neoprene<br>overboot= N | Other:<br>Faceshield<br>Safety glasses<br>Butyl apron<br>Waders<br>Leather Work<br>Gloves   |

**Summary of Proposed Activities:**

Activities will include an onsite inspection, air monitoring, soil sampling and surface water sampling.

**Monitoring Procedures:****Site Monitoring Equipment:**

- |   |   |
|---|---|
| <input type="checkbox"/> HNu                                      | <input type="checkbox"/> Mercury Vapor Sniffer              |
| <input type="checkbox"/> OVA                                      | <input type="checkbox"/> Dosimeter with probe               |
| <input type="checkbox"/> Mini H <sub>2</sub> S Gas Indicator      | <input type="checkbox"/> Explosimeter                       |
| <input type="checkbox"/> Draeger Tube(s) & Pump:                  | <input type="checkbox"/> O <sub>2</sub> meter               |
| <input checked="" type="checkbox"/> Radiation Monitor (Dosimeter) | <input checked="" type="checkbox"/> Conductivity, pH, and   |
| <input type="checkbox"/> Water Level Indicator                    | Temperature Meter   |
|   | <input checked="" type="checkbox"/> Others: <u>Microtip</u> |

**Methods and Frequency of Surveillance:**

There will be continuous air monitoring with the Microtip and continuous radiation monitoring with the mini-radiation monitor.

**Monitoring Equipment Calibration:**

- ☐ **Century Organic Vapor Analyzer (Model OVA 128)**  
Secondary check is required as per Health and Safety SOP prior to each usage. If secondary check is off by more than  $\pm 10$  percent, a Primary Calibration will be performed.

☐ **Photo-Ionizer (Model HNu PI-101)**

A single calibration conducted prior to an activity will be considered acceptable for periods of use up to three days, after which calibration gas must be used as per Health and Safety SOP. If the reading deviates more than  $\pm 15$  percent from concentration of the calibration gas, the instrument requires maintenance.

☐ **Super Mini Radiation Monitor**

Make a battery check before using the instrument. Replace the 9V battery if the meter indicator is not in the "batt" range. The instrument (Model 3500) have been factory-calibrated in reference to Cesium 137 (Cs-137) with an accuracy of  $\pm 15\%$ . The external and optional Geiger Muller probe (Model 3089) was factory-exposed to the following isotopes: Sr-90-y-90, Bi-210, Cs-137, and Am-241. Instrument should be calibrated every six (6) months.

☐ **Direct Reading Gamma & X-Ray Dosimeter (Model 865)**

This low range dosimeter (0-1,500 milliroentgen or 0-1.5 roentgen) can be charged and zeroed by pressing the charging end of the dosimeter on the charging contact of the Model 909 charger and adjusting the zeroing knob. When zeroing the dosimeter, set the fiber to the mark left of the zero since it will move or "kick" to approximately zero. Repeat this operation as often as required to produce a "true" zero when the dosimeter is slowly lifted from the charger. All dosimeters should be calibrated at fixed increments of time commensurate with their use, but on a regular basis. This is done to assure that measured exposures are in accordance with true exposures and



governmental regulations of the Radiation Safety Branch of the State Health Department. Be cautioned that some chargers do not "kick" the dosimeters properly and this may affect any calibration.

☒ Other: Microtip

**Decontamination and Disposal:**

**Personnel Decontamination Procedure: (x) level to be utilized**

- ☐ **Level A-** Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit and hard hat removal, SCBA backpack removal, inner glove wash, inner glove removal, inner clothing removal, field wash redress.
- ☐ **Level B-** Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, SCBA backpack removal, suit and hard hat removal, inner glove removal, inner clothing removal, field wash, redress.
- ☒ **Level C-** Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/safety boot wash, suit/safety boot rinse (Canister or Mask Change), safety boot removal, splash suit removal, inner glove removal, inner clothing removal, field wash, redress.

☒ Level D- Segregated equipment drop, boot and glove wash, boot and glove rinse.

☒ Modifications (specify): Waders, safety glasses and gloves will be wear during collection of surface water samples.

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**Equipment Decontamination:** Alconox/water wash, tap water rinse, 10% nitric acid rinse, tap water rinse, then rinse with methanol, hexane, methanol, analyte-free water, air dry and wrap with aluminum foil (shiny side out).

**Personal Decontamination:** Alconox wash, followed by tap water rinse.

**Disposal Procedure for Investigation Derived Materials:** See details on Attachment C

**IONIZING RADIATION:** Normal Background depends on the specific area.

If less than 2 mR/hr, continue investigation with caution.

If greater than 2 mR/hr, evacuate site.

## **SITE OPERATING PROCEDURES/SAFETY GUIDELINES**

- 1. Always observe the buddy system. Never enter or exit a site alone, and never work alone in an isolated area. Never wander off by yourself.**
- 2. Always maintain line-of-sight.**
- 3. Practice contamination avoidance. Never sit down or kneel, never lay equipment on the ground, avoid obvious sources of contamination such as puddles, and avoid unnecessary contact with on-site objects.**
- 4. No eating, drinking, or smoking outside the designated "clean" zone.**
- 5. In the event Personal Protective Equipment (PPE) is ripped or torn, work shall stop and PPE shall be removed and replaced as soon as possible.**
- 6. Be alert to any unusual changes in your own condition; never ignore warning signs. Notify Health and Safety Coordinator of suspected exposures or accidents.**
- 7. A vehicle will be readily available exclusively for emergency use. All EQB personnel going on site shall be familiar with the most direct route to the nearest hospital.**
- 8. In the event of direct skin contact, the affected area shall be washed immediately with soap and water.**
- 9. Copies of the health and safety plan shall be readily accessible at the command post.**

10. Note wind direction. Personnel shall remain upwind whenever possible during on-site activities.
11. Never climb over or under refuse or obstacles. Use safety harness/safety lines when sampling lagoons, stream beds, and ravines with steep banks.
12. Hands and face must be thoroughly washed before eating, drinking, etc.
13. Any modification to this safety plan MUST be approved by the Regional Health and Safety Manager (RHSM) designee.

**Special Procedures:**

No work will be conducted during extreme weather condition or darkness.

## OFF SITE SAMPLING ACTIVITIES

Off site activities delineated within the scope of this Site Safety Plan (SSP) will be conducted: ☒ Yes ☐ No. If yes, will it effect any of the following areas:

☐ Emergency contact information.

☒ Directions to hospital.

☐ Decontamination Procedures.

☐ Other: \_\_\_\_\_

Attach pages to describe required modification for off-site activities.

### Confined Space Entry

☒ No attempt will be made to enter abandoned buildings, manholes, tanks, or any other confined areas.

☐ Confined space entry will be made into the following: \_\_\_\_\_

**Medical Surveillance**

- ☐ No site specific medical surveillance is required for this task.
- ☒ Medical surveillance will be as follows: Due to climate conditions in  
Puerto Rico, personnel will be monitored for heat stress. Periodical checks  
of body temperature will be taken by the SSO.

**Personnel Monitoring**

- ☒ Personnel monitoring will include only the use of the Direct-Reading Radiation Monitor (Dosimeter). No further personnel monitoring is required.
- ☐ Personnel monitoring will also consist of: \_\_\_\_\_

## **EMERGENCY SITUATIONS**

### **Air Releases or Fire/Explosion:**

In the event of an unexpected air release or fire/explosion, on-site personnel will travel at a right angle to the upwind direction. The Site Safety Officer (SSO) will then account for all personnel and notify the proper emergency agencies.

In the event the SSO is unavailable, the Project Manager will assume these responsibilities.

### **Emergency Site Control:**

In the event of an emergency, the SSO will discourage any unauthorized personnel from entering the site. If necessary, the SSO will contact the proper authorities.

### **Personnel Injury:**

If on-site personnel require emergency medical treatment, the following steps will be taken:

- 1) Evaluate the nature of the injury.
- 2) Decontaminate to the extent possible prior to administration of first aid or movement to emergency facilities.

### **First Aid Procedures:**

**Skin Contact:** Remove contaminated clothing. Wash immediately with water. Use soap if available.

**Inhalation:** Remove from contaminated atmosphere. Provide artificial respiration, if necessary. Transport to hospital.

**Ingestion:** Never induce vomiting on an unconscious person. Also, never induce vomiting when acids, alkalis, or petroleum products are suspected. Contact the poison control center.

**Equipment Failure:** In the event that air monitoring equipment fails to operate, all personnel will exit the site immediately and notify the Regional Health and Safety Manager (RHSM) or designee for further instruction.

**Communication Procedures:**

**Siren** is the emergency signal to indicate that all personnel should leave the Exclusion Zone.

The following standard hands signals will be used in case of failure of radio communications:

Hand gripping throat ..... Out of air, can't breathe

Grip partner's wrist or ..... Leave area immediately  
both hands around waist

Hands on top of head ..... Need assistance

Thumbs up ..... OK, I am all right, I understand

Thumbs down ..... No, negative



**Radio Communication**

The following will be used on an "as-needed" basis:

Channel 1 has been designated as the radio frequency for personnel in the Exclusion Zone.

All other on-site communications will use channel 2.

Telephone communication to the Command Post should be established as soon as practicable. The phone number is (809) 383-2292.

**EMERGENCY INFORMATION****LOCAL RESOURCES:**

Ambulance (Name): Medical Emergencies Phone (809) 878-2330

Hospital (Name): Dr. Susoni Hospital Phone (809) 878-1010

Police (Local or State): Arecibo Police Station Phone (809) 878-2020

Fire Dept.(Name & Volunteer): Arecibo Fire Station Phone (809) 878-1444

Radio Channel: Scanning Yunque Antenna

Nearest Phone: PREQB Superfund Cellular Phone Phone (809) 383-2292

Civil Defense:

**OFFICE RESOURCES:**

PREQB Sampling Team Office Phone (809) 766-2823; 767-8181 ext. 3132

Amy Brochu - ACTING EPA RPO Phone (201) 906-6802

Juan Dávila - FITOM Phone (212) 637-4341

**EMERGENCY CONTACTS: (Medical and Health)**

■ Mr. Genaro Torres-León

Emergency Response and Superfund Area Director Phone (809) 766-2823

■ Poison Control Center

Phone (809) 754-8536

Phone 1-800-962-1253

■ CHEMTREC

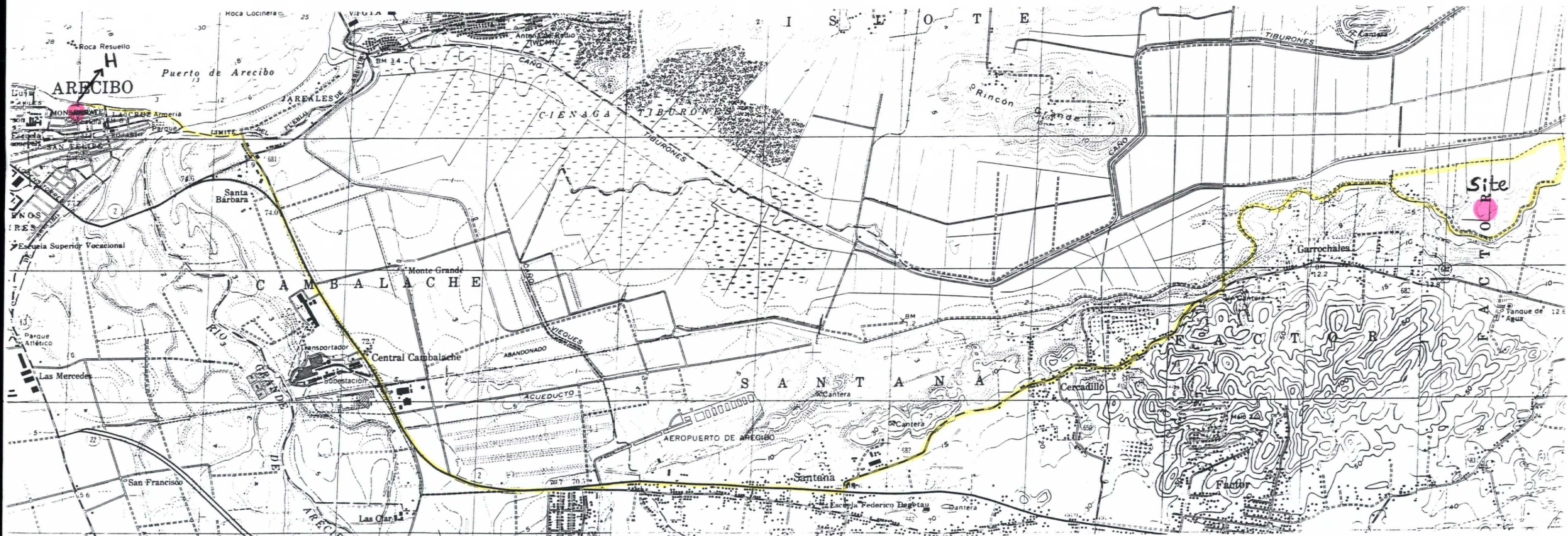
Phone 1-800-424-9300

**DIRECTIONS TO HOSPITAL (Include approximated distance, and attach map).**

Exit the site on the access road, turn to the right to take the State Road #682 and travel in west direction. Travel on this road until the intersection with State Road #2; turn to the right. Once in State Road #2, travel in west direction. Turn to the right at the second traffic light to leave the State Road #2. Continue traveling in straight direction passing another traffic light and a bridge toward the Arecibo town; bordering the north coast. The hospital is located at the second entrance to the left in Palma street #55.

## Hospital Map Route







## **EMERGENCY PHYSICIAN ACCESS PLAN**

### **PREQB, SUPERFUND PA/SI PROGRAM**

**A. Monday through Friday, 7:30 am - 4:00 pm, dial (809) 766-0368. When answered state that:**

- (1) you are an Environmental Quality Board employee**
- (2) this is an emergency call.**

**Program Staff will be alerted on how to contact the physician designated to provide emergency coverage on that day. Collect calls will be accepted.**

**B. Situations on which an employee requires immediate transport to a hospital: If the situation is life-threatening, e.g., cardiac arrest or person not breathing, call the emergency medical services system and transport the person to the nearest hospital with advanced life support capabilities. After obtaining assistance as stated above, call the (809) 766-0368 number and follow the procedures in A as appropriate.**

## FIELD CHEMICAL CHECKLIST

(Require MSDS When Brought Into The Field)

- ☐ Acetone
- ☒ Alconox
- ☒ Nitric acid
- ☐ Ascorbic acid
- ☐ Benzene
- ☐ Buffer solutions
- ☐ Conductivity standard
- ☐ Cupric sulfate
- ☐ Ferrous ammonium sulfate
- ☒ Gasoline
- ☒ Hexane
- ☒ Hydrochloric acid
- ☐ Isopropyl alcohol
- ☒ Methanol
- ☐ Methylene chloride
- ☐ Phosphoric acid
- ☐ Potassium iodide
- ☐ Sodium hydroxide
- ☐ Sulfuric acid
- ☐ Toluene
- ☐ 1,1,1-trichloroethane
- ☐ Trichloroethylene
- ☐ Cadmium Carbamate
- ☐ Sodium Tiosulfate

### Gases:

- ☐ Hydrogen sulfide
- ☒ Isobutylene
- ☒ Methane
- ☐ Nitrogen
- ☒ Hydrogen
- ☒ Zero gas

**ATTACHMENT B**

**SAMPLING PLAN**

## **SAMPLING PLAN**

Arecibo Solid Waste Disposal Site

State Road # 682, Km. 10.7, Hm. 0.6, Factor Ward

Arecibo, Puerto Rico



## SAMPLING PLAN

### OBJECTIVE

**The United States EPA Environmental Protection Agency (U.S. EPA) has tasked the Puerto Rico Environmental Quality Board (PREQB) Sampling Team to conduct a Site Inspection (SI) at the Arecibo Solid Waste Disposal Site, Factor Ward, Arecibo, Puerto Rico.**

### BACKGROUND

Arecibo Solid Waste Disposal is located in a total area of 93 to 95 acres from which 40 to 50 acres are used as an active area. The landfill is over a relatively flat area between the central and south canal of Caño Tiburones, which is a State Natural Reserve. This irrigation channel system is the nearest surface water body to the site. To the southwest at 0.5 miles is the Garrochales Community with approximately 100 residences; and southeast are two dairy farms, scattered houses along the roads and an unnamed intermittent creek. The landfill began operations in 1973 and have been admitting all kind of wastes from the Arecibo and the Barceloneta Municipalities including sludges from PRASA-Arecibo Filter Plant. Inspections to the site conducted by PREQB's denounced poor management practices, which have created air and water pollution problems. In 1985, NUS Corporation conducted a site investigation, finding as much as organic and inorganic compounds in sediment and surface water samples. Nevertheless, there is no evidence of collection of background samples for any of the pathways during the sampling, which means that there is no analytical samples for comparison in order to attribute contaminants to the site.

During the inspection performed by Superfund PA/SI personnel on July 1993, uncovered wastes, sludges, **biomedical wastes** and fires were observed in the landfill. This landfill could affect the Caño Tiburones Swamp, which is considered a critical wildlife area because of its potential for restoration as a waterfowl area. The groundwater flow in that area runs toward the north coast. It was not possible to find any drinking water wells due to the saline intrusion problems; for which groundwater samples will not be collected.

## SAMPLING STRATEGY

A total of eight surface water samples and five soil samples will be collected on the site. Since the landfill is bordered by two canals, the surface water samples will be collected in both canals. Two surface water samples and two soil samples will be collected at the PPE of the Central Canal and one surface water and one soil sample will be collected at the PPE of the south canal. All soil samples will be collected at the slopes of the respective channels. These samples will determine the concentration at which the contaminants reach both canals of the Caño Tiburones Swamp. Another two samples of surface water will be taken upstream and downstream of the Central Canal to establish a relation between the contaminants, if any, found in the canal and the landfill. Downstream samples will be collected before the upstream samples. Another two samples of surface water will be collected in the south canal in points where the flow change to determine the migration of contaminants (if any) from the landfill. All the samples will be analyzed for full Target Compound List and Target Analytical List excluding cyanide. Refer to Table I for a description and purposes of the samples.

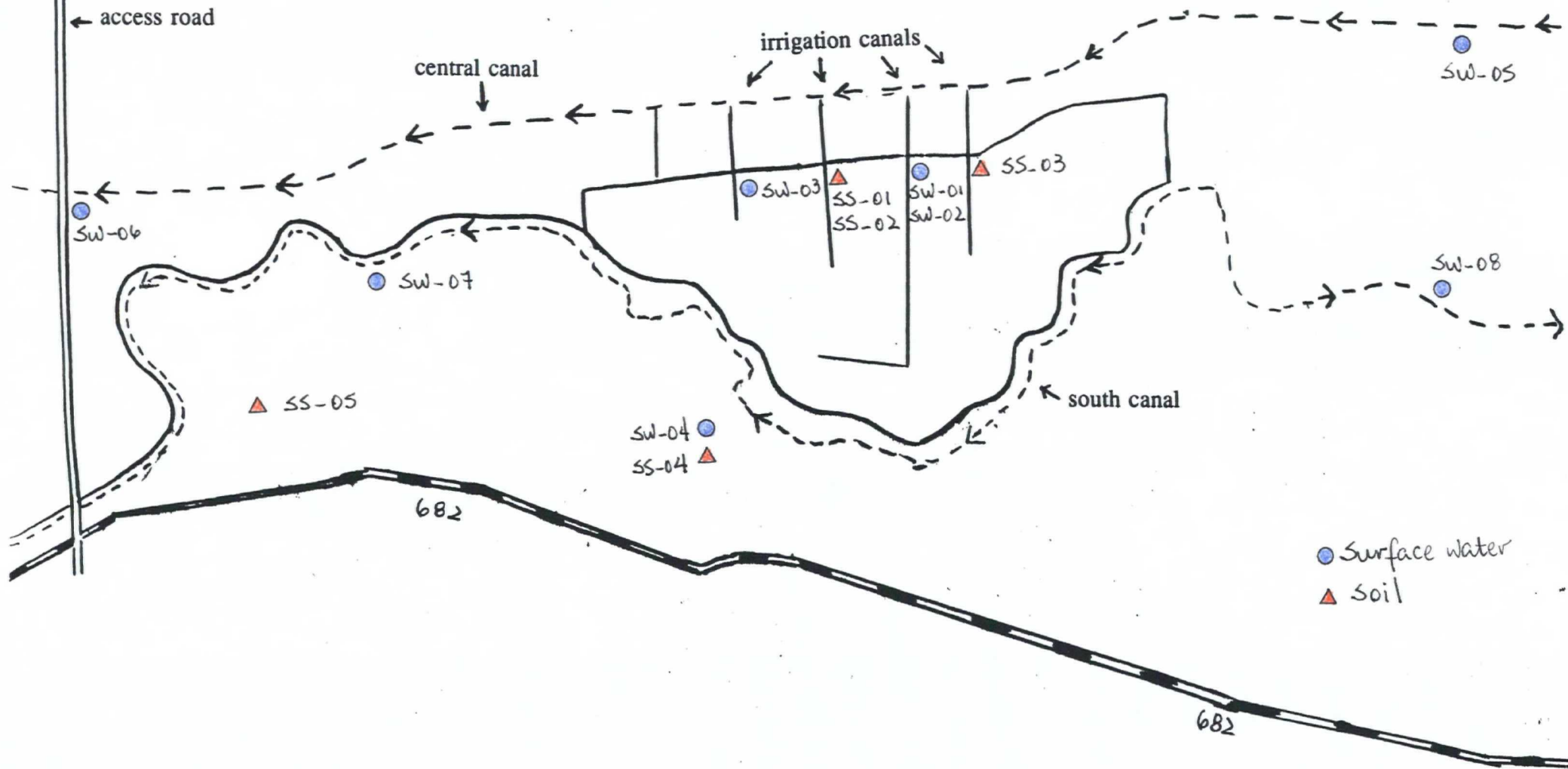
Continuous air monitoring will be conducted during all sampling activities using a Microtip and a Radiation Meter. Additional samples for Quality Assurance and Quality Control purposes will be collected as follow: three field rinsate blanks per sampling day, an analyte free water blank, duplicate for soil and water samples, MS/MSD for surface water matrix and trip blank.

Note: Grab samples will be taken during sampling activities.

- Backgrounds
  - SW
  - Soil

## **SAMPLING POINTS MAP**

# Arecibo Solid Waste Disposal



\*not to scale

Table I - Proposed Samples

| Matrix        | Sample Number           | Description (Location and objective)   |
|---------------|-------------------------|--|
| Surface Water | AWD-SW-01<br>AWD-SW-02D | Grab; surface water samples and its duplicate for QA/QC purposes collected in one of the irrigation canals at the north side of the active landfill area, which is also one of the PPE of the Central Canal; to determine types and concentration of hazardous substances. |
|               | AWD-SW-03               | Grab; surface water sample collected in another irrigation canal, north of the landfill; to determine types and concentration of hazardous substances.   |
|               | AWD-SW-04               | Grab; surface water sample collected to the south of the active landfill area in the named south canal, which runs parallel to the central canal, but in a different direction; to determine the type and concentration of hazardous substances.                           |
|               | AWD-SW-05               | Grab; surface water sample collected upstream of the PPE, northeast to the site; background.   |
|               | AWD-SW-06               | Grab; surface water sample collected downstream; northwest to the site on the Central Canal; to determine the migration, types and concentration of contaminants related to the site (matrix spike/matrix spike duplicate).  |
|               | AWD-SW-07               | Grab; surface water sample collected to the southwest of the landfill at the south canal; to determine the migration, concentration and types of contaminants related to the landfill following the west flow direction of that canal.                                     |
|               | AWD-SW-08               | Grab; surface water samples collected to the southeast of the landfill at the south canal; to determine the migration, concentration and types of contaminants related to the landfill following the east flow direction of that canal.                                    |
|               | AWD-TB-01               | Trip blank for quality control. ✓  |
|               | AWD-TB-02               | Trip blank for quality control. ✓  |
|               | AWD-AFB-01              | Analyte free blank for quality control.  |
|               | AWD-FRB-01              | Field rinsate blank for quality control (bowl)   |
|               | AWD-FRB-02              | Field rinsate blank for quality control (spoon)  |
|               | AWD-FRB-03              | Field rinsate blank for quality control (auger)  |
|               | AWD-FRB-04              | Field rinsate blank for quality control (bowl)   |
|               | AWD-FRB-05              | Field rinsate blank for quality control (spoon)  |
|               | AWD-FRB-06              | Field rinsate blank for quality control (auger)  |
| Soil          | AWD-SS-01<br>AWD-SS-02D | Grab soil sample and its duplicate for QA/QC purposes; collected depth of 0-12 inches in the entrance of one of the irrigation canals at the north of the active landfill area; to determine types and concentration of hazardous substances.                              |
|               | AWD-SS-03               | Grab soil sample; collected depth of 0-12 inches in the entrance of another irrigation canal at the north of the landfill; to determine types and concentration of hazardous substances.   |
|               | AWD-SS-04               | Grab soil sample; collected to the south of the active landfill area near to the south canal at depth of 0-12 inches; to determine type and concentration of contaminants.   |
|               | AWD-SS-05               | Grab soil sample collected to the southwest; out of the landfill; at depth of 0-12 inches as background sample. This sample will be used as background for the central and south canal since the latter began at the landfill. Both canals are similars.                   |

## **SAMPLING PROCEDURES**

Sampling procedures will be conducted in accordance with the "Quality Assurance Project Plan for Screening Site Inspection, EQB - December, 1992". This document describes the methods for collecting representative samples and decontaminating sampling equipment.

Tap water samples will be collected from off-site wells. Samples should be collected prior to the water passing through any water treatment devices such as a softener or filter. If this is not possible, the exact type of treatment system being used at each location must be recorded in the field logbook. The tap should be opened and allowed to run for 15 to 30 minutes prior to sample collection, or for a period of time sufficient to purge three to five standing volumes of the water supply.

### **Aqueous samples will be collected as follows:**

First the volatile organic fraction (VOA) is collected in two 40-ml vials, next the extractable organics fraction (semivolatiles and pesticides/PCBs) is collected in two 80-oz amber bottles, followed by the inorganic fraction (total metals) in a 1-liter polyethylene bottle. Tap water samples will be collected directly into the sample bottles. A surface water sample may be collected from a drainage pathway off site. The VOA must be bubble free and acidified to  $\text{pH} < 2$  using hydrochloric acid. The fraction for total metal analysis will be acidified to  $\text{pH} < 2$  using reagent-grade nitric acid. All aqueous samples are cooled to  $4^{\circ}\text{C}$  (i.e. placed in a cooler with ice).

### **Soil/sediments samples will be collected as follows:**

First the volatile organic fraction is collected in two 40-ml vials, next the extractable organics fraction (semivolatiles and pesticides/PCBs) is collected into one 8-oz wide mouth jar, followed by one 8-oz wide mouth jar for inorganics. Surface and subsurface soil samples will be collected using dedicated stainless steel trowels, scoopulas, bowls, augers, and other equipment. Sample fractions collected for volatile organics analysis will be



collected first and will be collected as grabs, (i.e., they will not be homogenized). Conversely, the nonvolatile or inorganic fraction of each sample will be mixed (i.e. homogenized) in a dedicated stainless steel bowl with a trowel before it is placed in the jar. All soil samples are cooled to 4°C (i.e. placed in a cooler with ice).

**Specific sampling QA/QC requirements are as follows:**

An environmental duplicate will be collected for both the soil and water matrices at a rate of one duplicate sample per matrix per week or 10% of all samples, whichever is greater. Duplicates consist of the same number and type of containers as their respective original samples.

Rinsate blanks of three (3) pieces of equipment used (e.g. trowel, bowl, auger) will be collected. These also consist of the same number and type of containers as their respective original aqueous samples.

One set of aqueous trip blanks, consisting of two 40-ml vials filled with analyte-free water will be prepared and carried per day, but only when aqueous samples are taken. Trip blanks are analyzed for VOA's only.

One set of Analyte-Free Water blanks, consisting of the same number and type of containers as the original aqueous samples, will be collected prior to each sampling event. The purpose for collecting this sample is to demonstrate that the analyte-free water used in the sampling events is consistent with the criteria specified in the USEPA Region II, "Quality Assurance Manual", October, 1989.

The analysis of CLP Target Compound List (TCL) Organic Matrix Spike/Matrix Spike Duplicates (MS/MSD) will be collected for aqueous samples only. MS/MSD will consist of three times (3x) the original sample amount, for a total of six 40-ml vials, six 80-oz. amber

bottles, and three 1-liter polyethylene bottles, collected in that order. Afterwards, if cyanide aliquots are collected during sampling, three additional 1-liter polyethylene bottles will be collected.

No chemical preservation is required for medium level water samples or for low/medium level soil samples unless otherwise directed.

Refer to Table 1 for a summary of sampling procedures.



**TABLE 3-1**  
**CLP ROUTINE ANALYTICAL SERVICES**

| SAMPLE LOCATION                             | NUMBER OF SAMPLES | MATRIX  | SAMPLING DEVICE                            | SAMPLE CONTAINER  | SAMPLE PRESERVATION                        | HOLDING TIME FROM SAMPLE COLLECTION                             | CLP LABORATORY ANALYSES <sup>(1)</sup> | METHOD DETECTION LIMITS               |
|---|-------------------|---------|--|---|--|---|--|---------------------------------------|
| SW, Blanks, PPE, Downstream, QC, Background | 13-17             | Aqueous | auger, bowl, scoopula                      | Two 40ml glass vials w/ teflon septum caps <sup>(2)</sup> | HCl to pH < 2<br>Cool to 4 °C              | 14 days if preserved;<br><br>7 days if unpreserved; to analysis | TCL VOAs<br>CLP SOW 3/90               | Compound Specific<br>(5-10 ug/l)      |
| SW, Blanks, PPE, Downstream, QC, Background | 13-17             | Aqueous | auger, bowl, scoopula                      | Two 80-oz amber glass bottles <sup>(2,4)</sup>            | Cool to 4 °C                               | 7 days extract;<br>40 days analysis                             | TCL Extractables<br>CLP SOW 3/90       | Compound Specific<br>(10-50 ug/l)     |
| SW, Blanks, PPE, Downstream, QC, Background | 13-17             | Aqueous | auger, bowl, scoopula                      | One 1L polyethylene bottle <sup>(2)</sup>                 | HNO <sub>3</sub> to pH < 2<br>Cool to 4 °C | 6 months analysis<br>(Hg 28 days)                               | TAL Inorganics<br>CLP SOW 7/88         | Compound Specific<br>(0.2-5000 ug/l)  |
| Background, PPE, QC, Downstream             | 5                 | Soil    | auger, bowl, scoopula, spoon, ponar dredge | Two 40ml glass vials w/ teflon septum caps                | Cool to 4 °C                               | 10 days to analysis   | TCL VOAs<br>CLP SOW 3/90               | Compound Specific<br>(5-10 ug/kg)     |
| Background, PPE, QC, Downstream             | 5                 | Soil    | auger, bowl, scoopula, spoon, ponar dredge | One 8 oz. glass bottle                                    | Cool to 4 °C                               | 7 days extract;<br>40 days analysis                             | TCL Extractables<br>CLP SOW 3/90       | Compound Specific<br>(330-1700 ug/kg) |
| Background, PE, PPE, QC, Downstream         | 5                 | Soil    | auger, bowl, scoopula, spoon, ponar dredge | One 8 oz. glass bottle                                    | Cool to 4 °C                               | 6 months analysis<br>(Hg 28 days)                               | TAL Inorganics<br>CLP SOW 7/88         | Compound Specific<br>(0.1-1000 mg/kg) |

<sup>(1)</sup> Contract Laboratory Program Organic Statement of Work - 3/90<sup>(2)</sup> Triple volume required for TCL organic matrix spike/matrix duplicate analysis.<sup>(4)</sup> Sample containers for extractable organic analysis have teflon-lined caps.  
Contract Laboratory Program Organic Statement of Work - 7/88<sup>(3)</sup> Preserve with 0.6 g Ascorbic Acid if oxidizing agents are present; add Cadmium  
Contract Laboratory Program Organic Statement of Work - 8/87 Carbonate if Sulfides (S<sup>2-</sup>) are present, (CLP User's Guide 12/88, page 18).

**DECONTAMINATION PROCEDURES**

All sampling equipment will be cleaned prior to its use in the collection of a particular sample. Routine equipment decontamination procedures will be done as follows:

1. Alconox and water wash
2. Tap water rinse
3. 10 percent nitric acid rinse \*
4. Tap water rinse
5. Methanol rinse (pesticide-grade)
6. Hexane rinse (pesticide-grade)
7. Methanol rinse (pesticide-grade)
8. Analyte-free water rinse
9. Air dry
10. Wrap in aluminum foil, shiny side out, for transport

\* 1 percent nitric acid must be used when decontaminating equipment composed of carbon steel.

Routine personnel decontamination will observe the following sequence:

1. Wash with Alconox
2. Rinse with tap water

**SAMPLE SEALING, PACKAGING, AND DOCUMENTATION**

Sample sealing, packaging, and documentation will be done in accordance with the USEPA, Region II, "CERCLA Quality Assurance Manual", Revision 1 - October, 1989.

Following sample collection and decontamination, the TDD number, date, case number, and sample number will be written on the Bottle Lot Number Form (i.e. sample labels) with

indelible ink and stuck to the bottles containing the samples. Each bottle will then be secured with a custody seal, taped shut, and placed inside individual plastic bags with a particular sample tag. Each sample will be recorded in the respective Traffic Report. The traffic reports and chain-of-custody documentation will be included with the samples in the appropriate coolers. The coolers will be sealed with two chain-of-custody seals and shipped via Federal Express to the designated laboratory on the day of sampling. Please refer to the Chain-of-Custody Procedures of the "Quality Assurance Project Plan for Screening Site Inspection", PREQB-December, 1992.

**ATTACHMENT C**

**INVESTIGATION DERIVED WASTE PLAN**

## **INVESTIGATION DERIVED WASTE PLAN**

**Investigation - derived wastes include disposable personnel protective equipment (DPPE), disposable sampling equipment (DSE), soil not collected as a sample, purged groundwater, and decontamination fluids (water and other fluids). DPPE and DSE will be decontaminated and rendered nonhazardous. All dry DPPE and DSE will be double-bagged and deposited in the site or in the nearest municipal landfill. Non-hazardous decontamination fluids from containers will be poured onto the ground and allowed to infiltrate or disposed of at the site's existing treatment or disposal unit (TDU).**

**If any organic decontamination fluids are generated and considered as RCRA hazardous wastes, they will be disposed off-site in compliance with the off-site policy or in compliance with the same requirements regulating conditionally exempt small quantity generators guidelines (i.e. 40 CFR Part 261.5 (g)(2) and 40 CFR Part 262.34). Refer also to the USEPA, "Management of Investigation - Derived Wastes During Site Inspections", May, 1991. The services of Ochoa Industrial Services, Inc. in Cataño, Puerto Rico, will be utilized for this purpose.**

**If a water well is purged to be sampled, the purged groundwater will be poured onto the ground next to the well and allowed to infiltrate or disposed of at the site's TDU. This will be performed based on signed agreements with the owners of the wells to be sampled.**

**Any residual of soils that are not collected as samples will be spread in the sample location and covered with soil. Any sediments not collected as samples will be returned to the surface water body.**

## REFERENCES

1. Mrs. Atanses, Engineer of the Arecibo Waste Disposal, telephone conversation with Pascual Velázquez, PREQB, March 4, 1997 and March 18, 1997.
  - a. Companies operating the landfill and size of the landfill.
  - b. Number of workers in the site.
2. P.R. Environmental Quality Board, Region II, Management/Task Work Plan. For the Arecibo Waste Disposal by Lizette Fuentes, March 7, 1995.
3. Preliminary Site Inspection Prioritization Evaluation, Arecibo Solid Waste Disposal by Jorge L. Quiñones, August 31, 1993.
4. Pascual E. Velázquez, PREQB, Field Logbook for Site Inspection Prioritization sampling activities performed on the Arecibo Waste Disposal, October 3-5, 1995.
5. USEPA Contract Laboratory Program, Compuchem Lab., Case No. 24063, Inorganic Analysis Data Package from PREQB Region II, Site Inspection Prioritization sampling activities conducted on the Arecibo Waste Disposal, on October 3-5, 1995.
6. USEPA Contract Laboratory Program, Compuchem Lab, Case No. 24063, Organic Analysis Data Package from PREQB Region II, Site Inspection Prioritization sampling activities conducted on the Arecibo Waste Disposal, on October 3-5, 1995.
7. Pascual E. Velázquez, PREQB, Sampling Trip Report for Arecibo Solid Waste Disposal, October 3-5, 1995.
8. Arecibo Solid Waste Disposal Site Inspection Photo Log, October 3-5, 1995. Photographer: Pascual E. Velázquez, Site Manager.

## ***REFERENCE 8***

## ***Arecibo Solid Waste Disposal Site Inspection***

**Date:** October 3-5, 1995  
**Site Name:** Arecibo Solid Waste Disposal  
**Camera:** Canon Sure Shot  
**Film:** Kodak Gold 100 - 24 exposures  
**Photographer:** Pascual E. Velázquez-García

### **PHOTO LOG**

| <b>ROLL/PHOTO<br/>NUMBER</b> | <b>TIME/DATE</b> | <b>DESCRIPTION</b>   |
|------------------------------|------------------|--|
| 1                            | 0927; 10/3/95    | Jorge L. Quiñones collecting the organic fraction of sample point AWD-SW-06 (sign in photo should have written in the time blank 0927) |
| 2                            | 0947; 10/3/95    | Jorge L. Quiñones collecting the inorganic portion of sample point AWD-SW-06   |
| 3                            | 1029; 10/3/95    | Jorge L. Quiñones collecting the organic portion of sample point AWD-SW-03   |
| 4                            | 1033; 10/3/95    | Jorge L. Quiñones collecting the inorganic fraction of sample point AWD-SW-03.   |
| 5                            | 1058; 10/3/95    | Nereida Hernández collecting the organic portion of sample point AWD-SW-01   |



|    |               |  |
|----|---------------|--|
| 6  | 1106; 10/3/95 | Nereida Hernández collecting the organic fraction of sample point AWD-SW-02D   |
| 7  | 1113; 10/3/95 | Nereida Hernández collecting the inorganic portion of sample point AWD-SW-01 (sign in photo should have written in the station location blank AWD-SW-01 instead of AWD-SS-01)  |
| 8  | 1120; 10/3/95 | Nereida Hernández collecting the inorganic portion of sample point AWD-SW-02D  |
| 9  | 1137; 10/3/95 | Nereida Hernández collecting the organic portion of sample point AWD-SW-05. (Sign in photo should have written in the station location blank AWD-SW-05 instead of AWD-SS-05)   |
| 10 | 1143; 10/3/95 | Nereida Hernández collecting the inorganic portion of sample point AWD-SW-05. (Sign in photo should have written in the station location blank AWD-SW-05 instead of AWD-SS-05) |
| 11 | 1045; 10/4/95 | Jorge L. Quiñones collecting the organic portion of sample point AWD-SW-07   |
| 12 | 1054; 10/4/95 | Jorge L. Quiñones collecting the inorganic portion of sample point AWD-SW-07   |
| 13 | 1116; 10/4/95 | Nereida Hernández collecting the organic portion of sample point AWD-SW-04   |

|    |               |  |
|----|---------------|--|
| 14 | 1123; 10/4/95 | Nereida Hernández collecting the inorganic portion of sample point AWD-SW-04   |
| 15 | 1250; 10/4/95 | Jorge L. Quiñones collecting the organic fraction of sample point AWD-SW-08  |
| 16 | 1255; 10/4/95 | Jorge L. Quiñones collecting the inorganic fraction of sample point AWD-SW-08  |
| 17 | 0912; 10/5/95 | Nereida Hernández collecting the organic fraction of sample point AWD-SS-01  |
| 18 | 0926; 10/5/95 | Nereida Hernández collecting the organic fraction of sample point AWD-SS-02D   |
| 19 | 1004; 10/5/95 | Nereida Hernández collecting the inorganic fraction of sample point AWD-SS-01 (Sign on photo should have written in the time blank 1004) |
| 20 | 1031; 10/5/95 | Nereida Hernández collecting the inorganic fraction of sample point AWD-SS-02D   |
| 21 | 1125; 10/5/95 | Cesar Morales collecting the organic fraction of sample point AWD-SED-04   |
| 22 | 1138; 10/5/95 | Cesar Morales collecting the inorganic fraction of sample point AWD-SED-04   |
| 23 | 1240; 10/5/95 | Jorge L. Quiñones collecting the organic fraction of sample point AWD-SS-05  |
| 24 | 1250; 10/5/95 | Jorge L. Quiñones collecting the inorganic portion of sample point AWD-SS-05   |

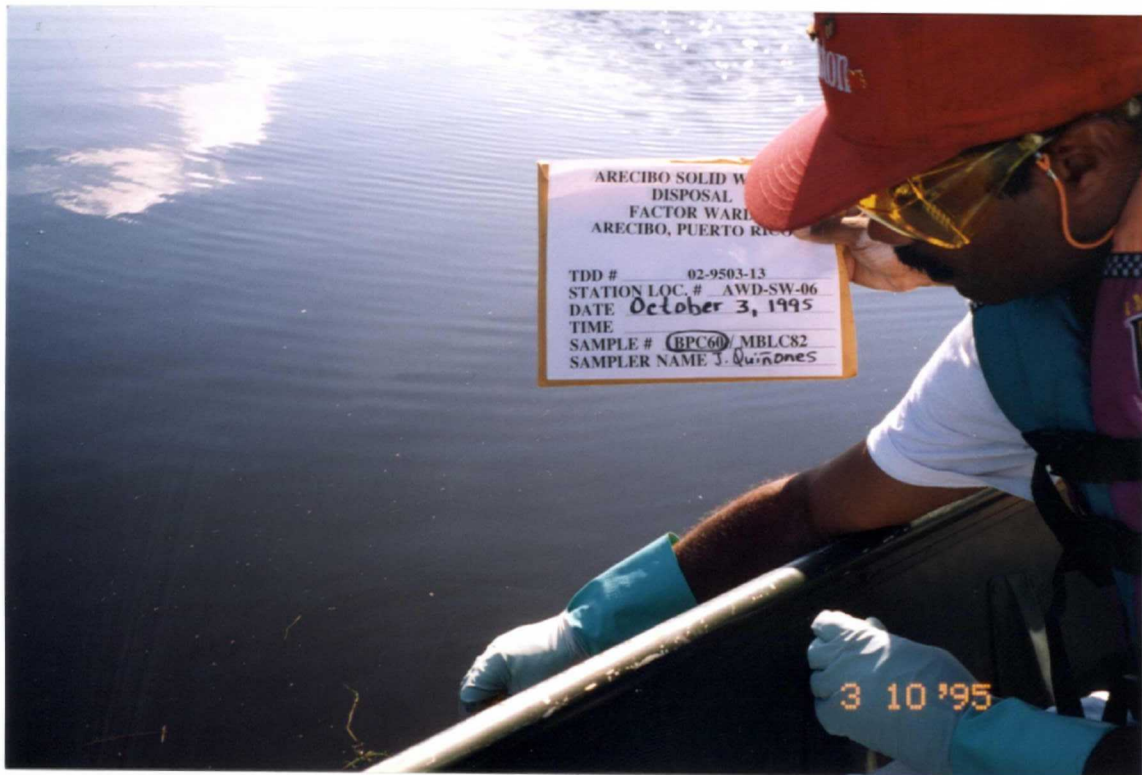


PHOTO 1

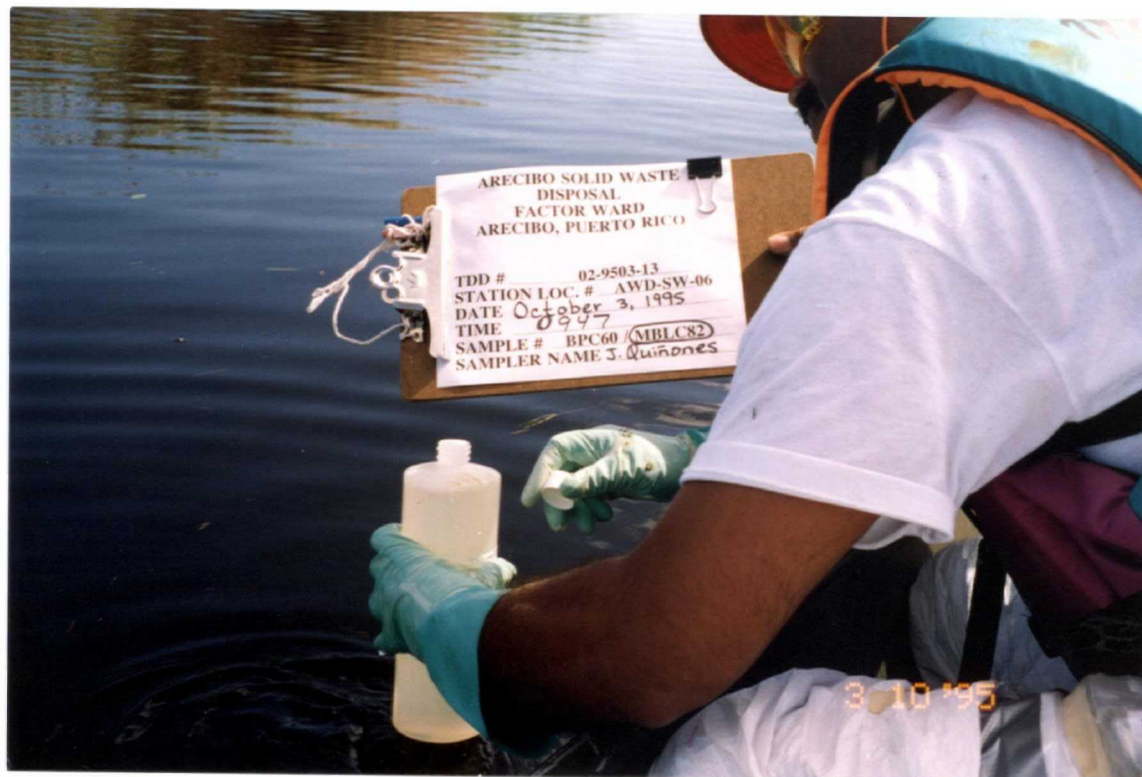


PHOTO 2

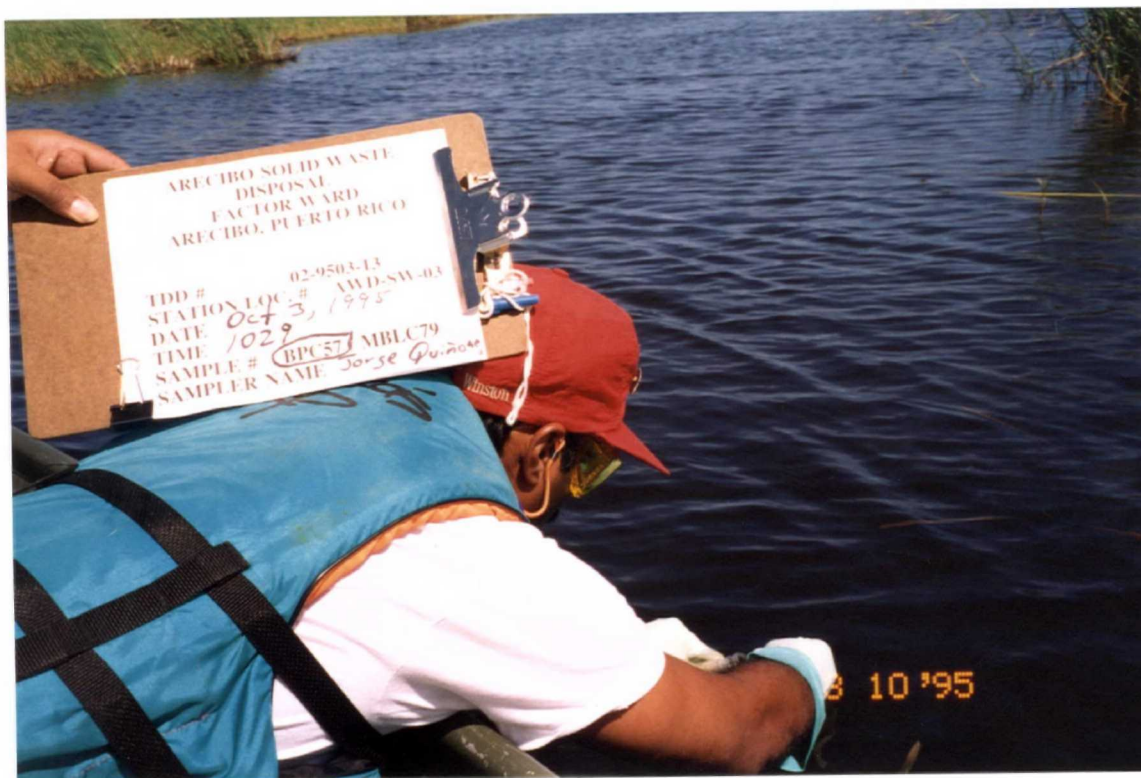


PHOTO 3



PHOTO 4



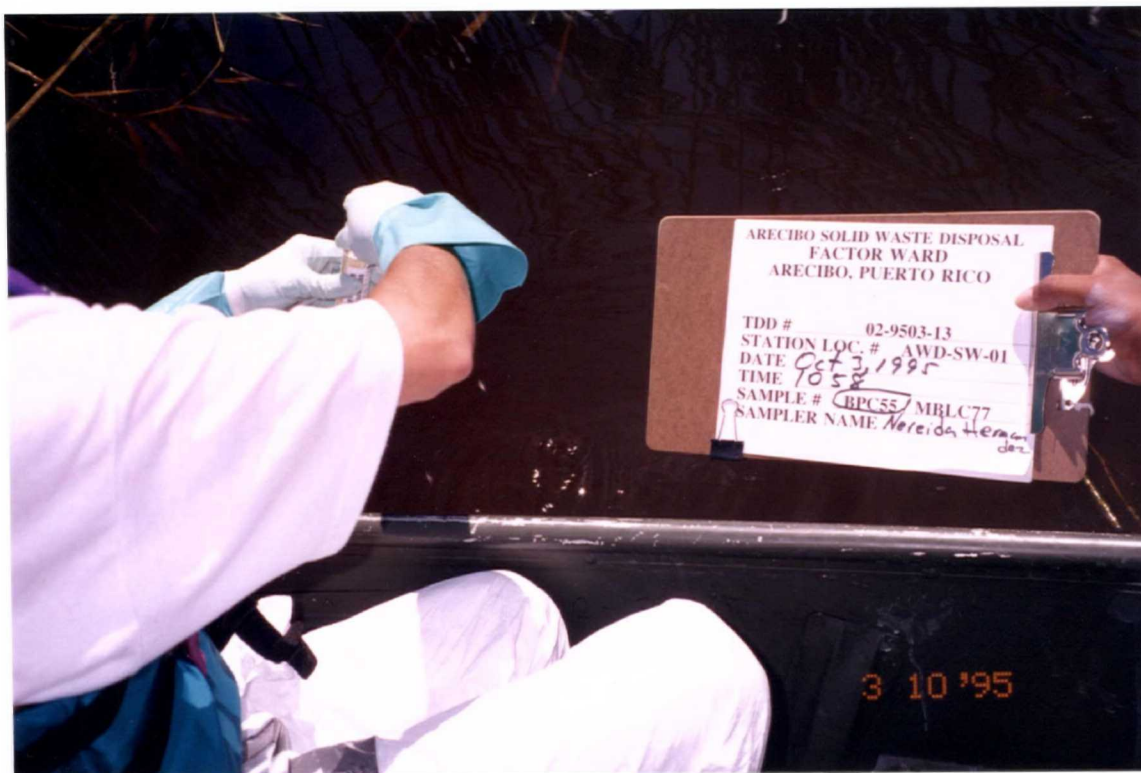


PHOTO 5



PHOTO 6



PHOTO 7



PHOTO 8





PHOTO 9

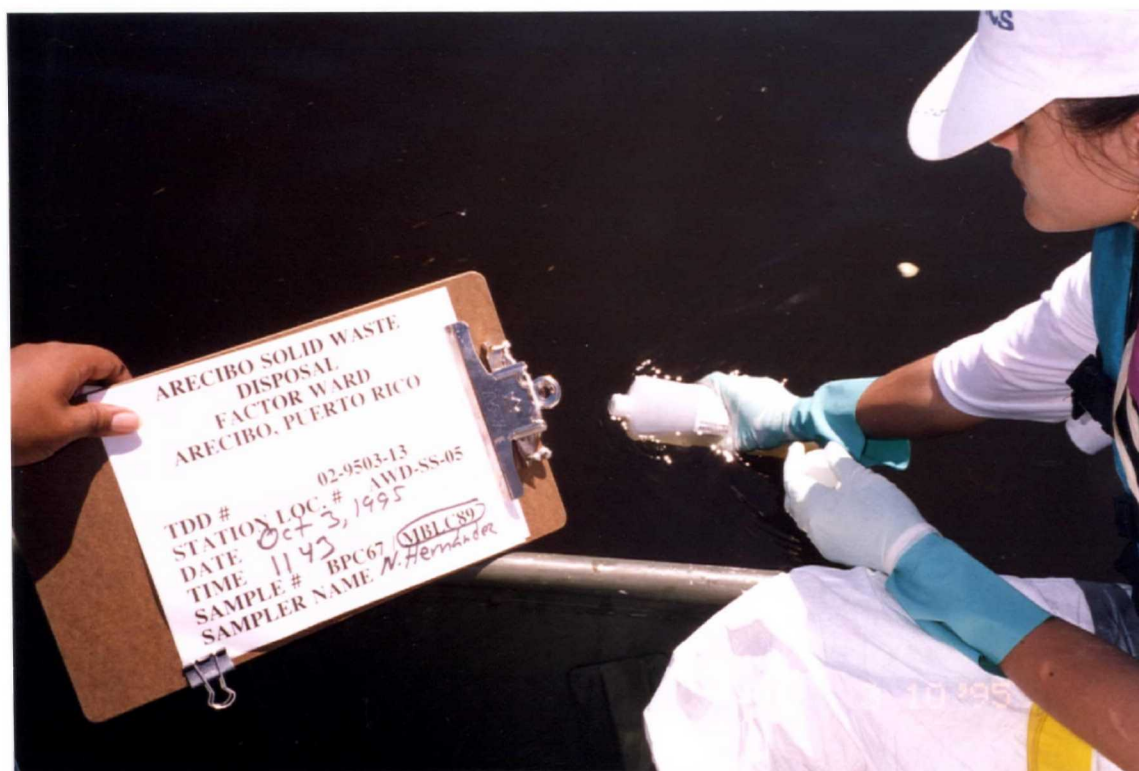


PHOTO 10



PHOTO 11



PHOTO 12





PHOTO 13



PHOTO 14





**PHOTO 15**



**PHOTO 16**





PHOTO 17

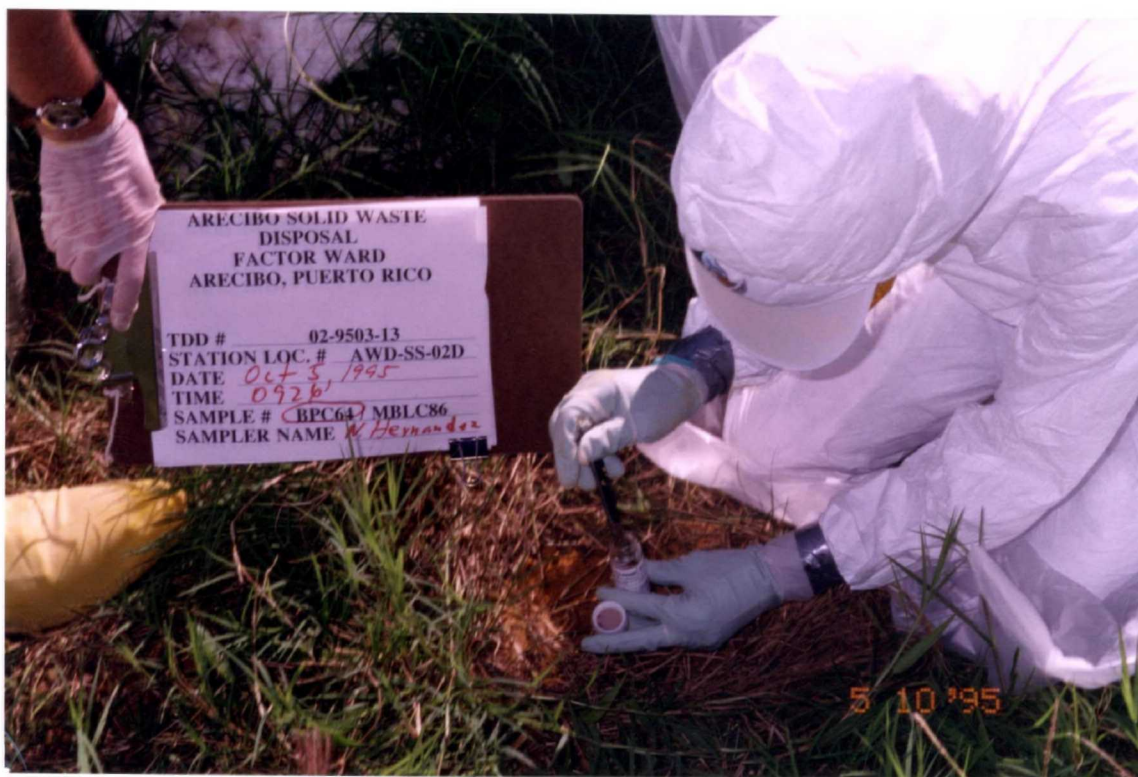


PHOTO 18





PHOTO 19

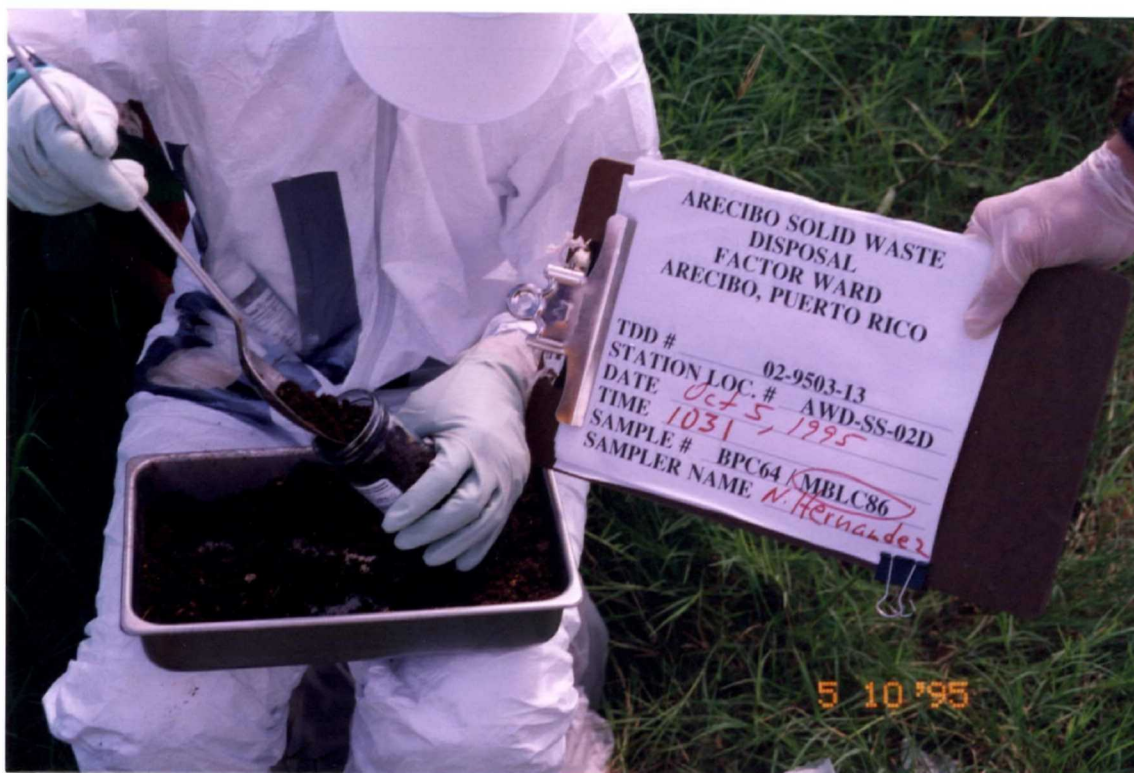


PHOTO 20



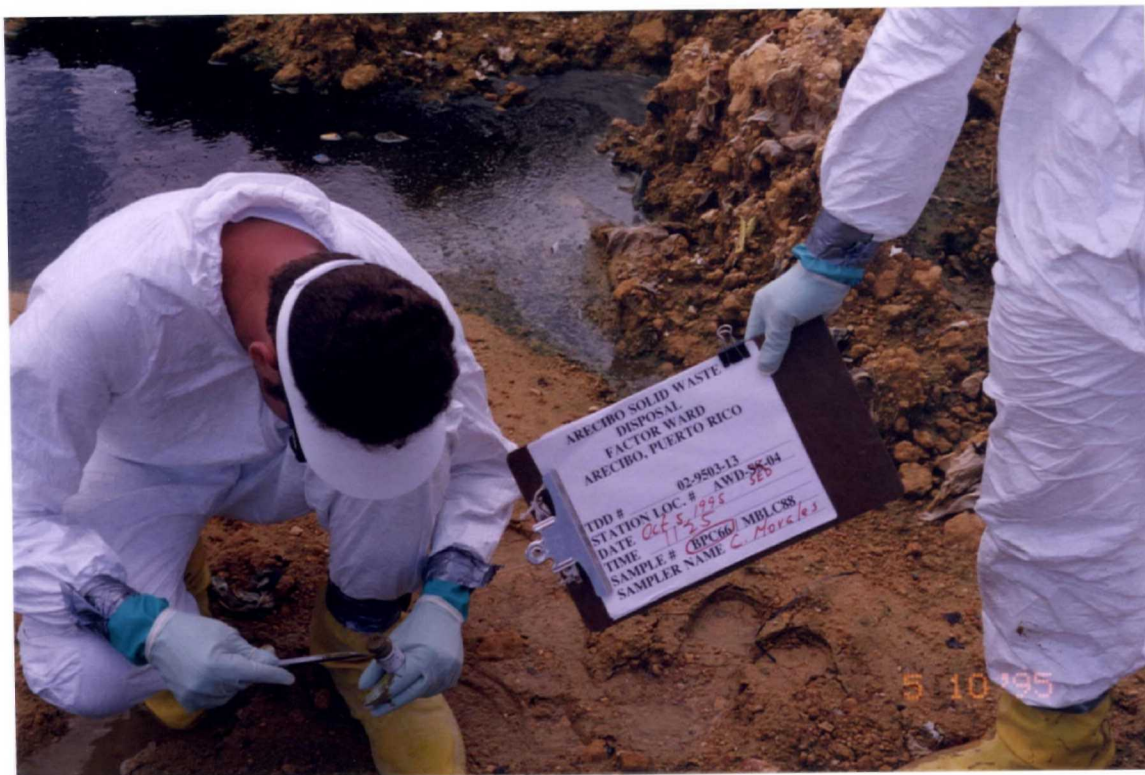


PHOTO 21



PHOTO 22





PHOTO 23



PHOTO 24